

CLAIMS

1. An intermittent communication method for data communication apparatus, comprising:
 - a reception step for storing data received intermittently into a buffer memory;
 - a playback step for playing the stored data in the buffer memory in parallel with the reception step; and
 - a first setup step for setting up a first transmission schedule which will not cause either overflow or underflow of data in the buffer memory, based on a data characteristic of the data.
2. The intermittent communication method for data communication apparatus according to Claim 1, wherein the data characteristic includes an elapsed time after a start of data playback and a necessary total amount of data up to the elapsed time.
3. The intermittent communication method for data communication apparatus according to Claim 1, wherein the data characteristic is information that can lead a necessary total amount of data up to an elapsed time after a start of data playback.
- 25 4. The intermittent communication method for data

communication apparatus according to Claim 2 or 3, wherein the data characteristic includes a total amount of data that will have been used by the elapsed time.

5 5. The intermittent communication method for data communication apparatus according to Claim 2 or 3, wherein the data characteristic is information that can lead a total amount of data that will have been used by the elapsed time.

10 6. The intermittent communication method for data communication apparatus according to Claim 1, wherein the first transmission schedule includes a data transmission rate.

15 7. The intermittent communication method for data communication apparatus according to Claim 6, wherein the first transmission schedule includes an amount of buffering of data to be stored in advance in the buffer memory from a start of data transmission from a transmitter to a beginning of playback on a receiver.

20 8. The intermittent communication method for data communication apparatus according to Claim 7, wherein the amount of buffering is set at the maximum.

25 9. The intermittent communication method for data

communication apparatus according to Claim 6, wherein the data transmission rate is set at the maximum.

10. The intermittent communication method for data
5 communication apparatus according to Claim 6, wherein the data transmission rate is set at the minimum.

11. The intermittent communication method for data
communication apparatus according to Claim 1, wherein the
10 first transmission schedule includes intermittent
communication information that represents the amount of data
transmission in one intermittent period.

12. The intermittent communication method for data
15 communication apparatus according to Claim 11, wherein the
intermittent communication information includes the time of
transmission in each intermittent communication period.

13. The intermittent communication method for data
20 communication apparatus according to Claim 11, wherein the
intermittent communication information includes the amount
of data transmission in each intermittent communication
period.

25 14. The intermittent communication method for data

communication apparatus according to Claim 11, wherein the intermittent communication information includes a data transmission rate in each intermittent communication period.

5 15. The intermittent communication method for data communication apparatus according to Claim 1, wherein the first transmission schedule includes a start time of a new intermittent communication.

10 16. The intermittent communication method for data communication apparatus according to Claim 1, further comprising:

15 a comparison step for comparing the first transmission schedule with a current transmission schedule of the data being communicated; and

 a proposal step for transmitting the first transmission schedule to a communication partner side when the first transmission schedule is different from the current transmission schedule.

20 17. The intermittent communication method for data communication apparatus according to Claim 16, wherein the communication partner side includes:

25 a second setup step for setting up a second transmission schedule which will not cause either overflow or underflow

of data in the buffer memory, based on the data characteristic;
and

a modification step for modifying the current
transmission schedule into the first or second transmission
schedule if the first and second schedules are identical.

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18. The intermittent communication method for data
communication apparatus according to Claim 16, wherein a
receiver of the data implements the reception step, the
playback step, the first setup step, the comparison step and
the proposal step.

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19. The intermittent communication method for data
communication apparatus according to Claim 16, wherein a
transmitter of the data implements the first setup step while
a receiver of the data implements the reception step, the
playback step, the comparison step and the proposal step.

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20. The intermittent communication method for data
communication apparatus according to Claim 16, wherein a
transmitter of the data implements the first setup step, the
comparison step and the proposal step while a receiver of
the data implements data reception step and the playback step.

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25 21. The intermittent communication method for data

communication apparatus according to Claim 17, wherein the data is transmitted from a single transmitter to first and second receivers, and the modification step is implemented between the transmitter and the first receiver and between the transmitter and the second receiver.

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22. The intermittent communication method for data communication apparatus according to Claim 16, wherein the first setup step, the comparison step and the proposal step are executed in a data link layer in terms of an OSI layer model.

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23. A data communication apparatus for receiving data transmitted intermittently from a transmitting side, storing the data into a buffer memory and playing the data stored in the buffer memory in real time in parallel with the data storing,

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comprising:

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a multimedia data communication controller for setting up a transmission schedule which will not cause either overflow or underflow during a real-time playback of the data, based on a data characteristic of the data; and

a communicator for transmitting the transmission schedule to the transmitting side.

24. The data communication apparatus according to Claim 23,
wherein the transmission schedule includes a time interval
for alternation of intermittent communication or the amount
of data transmission for alternation of intermittent
5 communication.

25. A data communication apparatus for playing received data,
comprising:

an inter-node communicator for implementing
10 transmission and reception of data with a communication
partner appliance;

a buffer memory for storing the data received by the
inter-node communicator;

15 a data player for playing the storage data stored in
the buffer memory in parallel while the buffer memory is
implementing a buffering process of storing the data;

a data quality manager for storing quality management
information of the received data to be played; and

20 a schedule judging portion for transmitting to the
inter-node communicator a transmission schedule of the data,
according to which the buffer memory will not cause either
overflow or underflow,

wherein the transmission schedule is set up based on the quality
management information.

26. A data communication apparatus, comprising:

an inter-node communicator for transmitting data to a communication partner appliance;

5 a data quality manager for storing quality management information of the data; and

a schedule judging portion for transmitting to the inter-node communicator a transmission schedule of the data, according to which a buffer memory of the communication partner appliance will not cause either overflow or underflow, wherein the transmission schedule is set up based on the quality 10 management information.

27. The data communication apparatus according to Claim 25 or 26, further comprising:

15 a data quality reference portion for transmitting the quality management information from the data quality manager to the schedule judging portion, wherein the transmission schedule is set up by the schedule judging portion.

20 28. The data communication apparatus according to Claim 25 or 26, further comprising:

25 a data quality reference portion for acquiring the quality management information from the data quality manager and setting up the transmission schedule.

29. The data communication apparatus according to Claim 25
or 26, further comprising:

5 an electric power supply controller for stopping electric
power supply to the inter-node communicator during a rest
time of intermittent communication, in accordance with the
transmission schedule.

10 30. The data communication apparatus according to Claim 25
or 26, wherein the quality management information includes
an elapsed time after a start of playback of the data and
a necessary total amount of data up to the elapsed time.

15 31. The data communication apparatus according to Claim 25
or 26, wherein the quality management information is
information that can lead the necessary total amount of data
up to an elapsed time after a start of playback of the data.

20 32. The data communication apparatus according to Claim 30
or 31, wherein the quality management information includes
a total amount of data that will have been used by the elapsed
time.

25 33. The data communication apparatus according to Claim 30
or 31, wherein the quality management information is

information that can lead a total amount of data that will have been used by the elapsed time.

34. The data communication apparatus according to Claim 25
5 or 26, wherein the transmission schedule includes a data transmission rate.

35. The data communication apparatus according to Claim 34,
wherein the transmission schedule includes an amount of
10 buffering of data to be stored in advance in the buffer memory from a start of data transmission from a transmitter to a beginning of playback on a receiver.

36. The data communication apparatus according to Claim 35,
15 wherein the amount of buffering is set at the maximum.

37. The data communication apparatus according to Claim 34,
wherein the data transmission rate is set at the maximum.

20 38. The data communication apparatus according to Claim 34,
wherein the data transmission rate is set at the minimum.

25 39. The data communication apparatus according to Claim 25
or 26, wherein the transmission schedule includes intermittent communication information that represents an amount of data

transmission in one intermittent period.

40. The data communication apparatus according to Claim 39,
wherein the intermittent communication information includes
5 a time of transmission in each intermittent communication
period.

41. The data communication apparatus according to Claim 39,
wherein the intermittent communication information includes
10 an amount of data transmission in each intermittent
communication period.

42. The data communication apparatus according to Claim 39,
wherein the intermittent communication information includes
15 a data transmission rate in each intermittent communication
period.

43. The data communication apparatus according to Claim 25
or 26, wherein the transmission schedule includes a start
20 time of a new intermittent communication.

44. A program for making a data communication apparatus
execute the intermittent communication method according to
any one of Claims 1 to 22.

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ART 34 AMDT

45. (Amended) A recording medium on which the program
according to Claim 44 is recorded.

AMENDED SHEETS